Complete Summary

GUIDELINE TITLE

Operative vaginal delivery.

BIBLIOGRAPHIC SOURCE(S)

Royal College of Obstetricians and Gynaecologists (RCOG). Operative vaginal delivery. London (UK): Royal College of Obstetricians and Gynaecologists (RCOG); 2005 Oct. 13 p. (Guideline; no. 26). [78 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Royal College of Obstetricians and Gynaecologists (RCOG). Instrumental vaginal delivery. London (UK): Royal College of Obstetricians and Gynaecologists (RCOG); 2000 Oct.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Pregnancy

GUIDELINE CATEGORY

Management

CLINICAL SPECIALTY

Family Practice
Obstetrics and Gynecology

INTENDED USERS

Advanced Practice Nurses
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To provide up to date information on the use of the forceps and vacuum extractor for both rotational and non-rotational operative vaginal deliveries

TARGET POPULATION

Pregnant women

INTERVENTIONS AND PRACTICES CONSIDERED

Operative vaginal delivery through use of forceps or vacuum extraction, including

- Continuous support of women during labor to decrease the need for operative vaginal delivery
- Assessment of the need for operative vaginal delivery and determining that prerequisites have been attained
- Aftercare following operative vaginal delivery (thromboprophylaxis, physiotherapy to prevent urinary incontinence, advice for future deliveries)

MAJOR OUTCOMES CONSIDERED

- Rate of successful operative vaginal delivery
- Maternal morbidity and mortality
- Neonatal morbidity and mortality

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A search of Medline and Embase from 1999 to 2004, and of the Cochrane Library, Issue 2, 2004, was undertaken for relevant systematic reviews, meta-analyses, randomised controlled trials (RCTs), and other clinical trials. The date of the last search was July 2004.The main keywords used were: "extraction, obstetrical," "vacuum extraction, obstetrical," "vacuum extraction, instrumental delivery,"

"obstetrical forceps," "forceps delivery," "forceps," "ventouse," "labour, obstetric," "delivery, obstetric," and "parturition."

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Ia: Evidence obtained from meta-analysis of randomised controlled trials

Ib: Evidence obtained from at least one randomised controlled trial

IIa: Evidence obtained from at least one well-designed controlled study without randomisation

IIb: Evidence obtained from at least one other type of well-designed quasi-experimental study

III: Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies, and case studies

IV: Evidence obtained from expert committee reports or opinions and/or clinical experience of respected authorities

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

The recommendations were graded according to the level of evidence upon which they were based. The grading scheme used was based on a scheme formulated by the Clinical Outcomes Group of the National Health Service (NHS) Executive.

Grade A - Requires at least one randomised controlled trial as part of a body of literature of overall good quality and consistency addressing the specific recommendation (evidence levels Ia, Ib)

Grade B - Requires the availability of well-conducted clinical studies but no randomised clinical trials on the topic of recommendations (evidence levels IIa, IIb, III)

Grade C - Requires evidence obtained from expert committee reports or opinions and/or clinical experience of respected authorities. Indicates an absence of directly applicable clinical studies of good quality (evidence level IV)

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Following discussion in the Guidelines and Audit Committee, each green-top guideline is formally peer reviewed. At the same time the draft guideline is published on the Royal College of Obstetricians and Gynaecologists (RCOG) Web site for further peer discussion before final publication.

The names of author(s) and nominated peer reviewers are included in the original guideline document.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

In addition to these evidence-based recommendations, the guideline development group also identifies points of best clinical practice in the original guideline document.

Levels of evidence (Ia-IV) and grading of recommendations (A-C) are defined at the end of the "Major Recommendations" field.

Preparation for Operative Vaginal Delivery

Can Operative Vaginal Delivery be Avoided?

A - All women should be encouraged to have continuous support during labour. Use of a partogram, use of upright or lateral positions, and avoiding epidural analgesia will reduce the need for operative vaginal delivery. Oxytocin in primiparous women with epidurals will decrease the need for operative vaginal delivery. Delayed pushing in primiparous women with an epidural will reduce the risk of rotational and mid-cavity deliveries.

In primiparous women with epidural anaesthesia, starting oxytocin in the second stage of labour can reduce the need for non-rotational forceps delivery. Extreme caution should be taken before using oxytocin for the second stage in multiparous women. Each woman should be assessed individually for the management of the second stage. (Evidence level Ib)

How Should Operative Vaginal Delivery Be Defined?

C - A standard classification of operative vaginal delivery should be used.

To enable benchmarking, audit, and comparison between studies, a standard definition of the types of operative delivery should be used. The American College of Obstetricians and Gynecologists criteria are adapted in the table below titled "Classification for Operative Vaginal Delivery" and define the delivery by the station and position. (Evidence level IV)

Classification for Operative Vaginal Delivery (Adapted from ACOG 2000)

Term	Definition
Outlet	• Fetal scalp visible without separating the labia • Fetal skull has reached the pelvic floor • Sagittal suture is in the antero-posterior diameter or right or left occiput anterior or posterior position (rotation does not exceed 45 degrees) • Fetal head is at or on the perineum
Low	• Leading point of the skull (not caput) is at station plus 2 cm or more and not on the pelvic floor • Two subdivisions: a. rotation of 45 degrees or less b. rotation more than 45 degrees
Mid	• Fetal head is 1/5 palpable per abdomen • Leading point of the skull is above station plus 2 cm but not above the ischial spines • Two subdivisions a. rotation of 45 degrees or less b. rotation more than 45 degrees
High	Not included in classification

When Should Operative Vaginal Delivery Be Offered?

C - Operators should be aware that no indication is absolute and should be able to distinguish "standard" from "special" indications.

Operative intervention is used to shorten the second stage of labour. It may be indicated for conditions of the fetus or of the mother (see table below titled "Indications for Operative Vaginal Delivery"). (Evidence level III)

Indications for Operative Vaginal Delivery (no indication is absolute and each case should be considered individually)

Type	Indication
Fetal	Presumed fetal compromise
Maternal	Medical indications to avoid Valsalva (e.g., cardiac disease Class III or IV[a] hypertensive crises, cerebral vascular disease, particularly uncorrected cerebral vascular malformations, myasthenia gravis, spinal cord injury)
Inadequate progress	Nulliparous women: lack of continuing progress for three hours (total of active and passive second stage labour) with regional anaesthesia, or two hours without regional anaesthesia Multiparous women: lack of continuing progress for two hours (total of active and passive second stage labour) with regional anaesthesia, or one hour without regional anaesthesia Maternal fatigue/exhaustion

[a] New York Heart Association classification

Fetal bleeding disorders (e.g. alloimmune thrombocytopenia) or a predisposition to fracture (e.g. osteogenesis imperfecta) are relative contraindications to operative vaginal delivery. However, there may be considerable fetal risk if the head has to be delivered abdominally from deep in the pelvis. The risk of vertical transmission of hepatitis C virus appears to be related to the level of viraemia in the pregnant mother and not to the route of delivery. However, it is sensible to avoid difficult operative delivery where there is an increased chance of fetal abrasion or scalp trauma, as it is to avoid fetal scalp clips or blood sampling during labour. (Evidence level IV)

The vacuum extractor is contraindicated with a face presentation. It has been suggested that it should not be used at gestations of less than 36 weeks because of the risk of cephalohaematoma and intracranial haemorrhage. (Evidence level IV)

At present, the Royal College of Obstetricians and Gynaecologists (RCOG) recommends avoiding the use of vacuum below 34 weeks because of the susceptibility of the preterm infant to cephalohaematoma, intracranial haemorrhage, and neonatal jaundice. (Evidence level IV)

Forceps and vacuum extractor deliveries before full dilatation of the cervix are contraindicated. There are a few exceptions which include a prolapsed cord at 9 cm in a multiparous woman or a second twin. Forceps are indicated for the aftercoming head of the breech and in situations where maternal effort is impossible or contraindicated. (Evidence level III)

What are the Essential Conditions for Safe Operative Vaginal Delivery?

C - Safe operative vaginal delivery requires a careful assessment of the clinical situation, clear communication with the mother and healthcare personnel, and expertise in the chosen procedure.

Like any operative intervention, adequate preparation and planning is important. Be cautious in the urgent situation and at handover periods when time pressures can limit the information given (see table below).

Prerequisites for Operative Vaginal Delivery*

Preparation	Essential
Full abdominal and vaginal examination	• Head is $\leq$ 1/5 palpable per abdomen • Vertex presentation • Cervix is fully dilated and the membranes ruptured • Exact position of the head can be determined so proper placement of the instrument can be achieved • Pelvis is deemed adequate
Mother	• Informed consent must be obtained and clear explanation given • Appropriate analgesia is in place, for mid-cavity rotational deliveries this will usually be a regional block • A pudendal block may be appropriate, particularly in the context of urgent delivery • Maternal bladder has been emptied recently • Indwelling catheter should be removed or balloon deflated • Aseptic techniques
Staff	• Operator must have the knowledge, experience, and skills necessary to use the instruments • Adequate facilities and back-up personnel are available • Back-up plan in place in case of failure to deliver • Anticipation of complications that may arise (e.g., shoulder dystocia, postpartum haemorrhage) • Personnel present who are trained in neonatal resuscitation

*Adapted from SOGC Clinical practice guideline No 148, August 2004 Guidelines for operative vaginal birth. J Obstet Gynaecol Can 2004;26:747-53; Royal Australian and New Zealand College of Obstetricians and Gynaecologists. Instrumental Vaginal Delivery. College Statement No.C-Obs 16.Melbourne:RANZCOG;2004. [www.ranzcog.edu.au/publications/statements/C-obs16.pdf]; Royal Australian and New Zealand College of Obstetricians and Gynaecologists. Guidelines for Use of Rotational Forceps. College Statement No. C-Obs 13. Melbourne:RANZCOG; 2004 ["www.ranzcog.edu.au/publications/statements/C-obs13.pdf].

Performing Operative Vaginal Delivery

Who Should Perform Operative Vaginal Delivery?

C - The operator must have the knowledge, experience, and skills necessary to use the instruments and manage complications that may arise.

Where Should Operative Vaginal Delivery Take Place?

C - Operative vaginal births that have a higher rate of failure should be considered a trial and conducted in a place where immediate recourse to caesarean section can be undertaken.

What Instruments Should be Used for Operative Vaginal Delivery?

A - The operator should choose the instrument most appropriate to the clinical circumstances and their level of skill. Forceps and vacuum extraction are associated with different benefits and risks.

When Should Operative Vaginal Delivery be Abandoned?

Operative vaginal delivery should not be attempted unless the criteria for safe delivery have been met (see table above entitled "Prerequisites for Operative Vaginal Delivery").

B - Operative vaginal delivery should be abandoned where there is no evidence of progressive descent with each pull or where delivery is not imminent following three pulls of a correctly applied instrument by an experienced operator.

Is There a Place for Sequential Use of Instruments?

B - The use of sequential instruments is associated with an increased risk of trauma to the infant. However, the operator must balance the risks of a caesarean section following failed vacuum extraction with the risks of forceps delivery following failed vacuum extraction.

The sequential use of instruments should not be attempted by an inexperienced operator without direct supervision and should be avoided wherever possible.

Should Prophylactic Antibiotics be Given?

A - There is insufficient data to make recommendations regarding prophylactic antibiotics in operative vaginal delivery.

Aftercare Following Operative Vaginal Delivery

Should Thromboprophylaxis be Given?

C - Women should be reassessed after an operative delivery for risk factors for venous thromboembolism.

What Precautions Should be Taken for Care of the Bladder after Delivery?

C - The timing and volume of the first void urine should be monitored.

A - Women should be offered physiotherapy-directed strategies to prevent urinary incontinence.

Urine retention with bladder overdistension should be avoided, particularly in women who have had spinal or dense epidural blocks. (Evidence level III)

How Can We Reduce Psychological Morbidity for the Mother?

A - There is no evidence to support the use of midwife-led debriefing in reducing maternal depression following operative vaginal delivery.

How Should We Advise Women for Future Deliveries?

B - Women should be encouraged to aim for a spontaneous vaginal delivery in a subsequent pregnancy, as there is a high probability of success.

This discussion should take place at the earliest opportunity, as there is evidence to suggest that women decide on future mode of delivery soon after delivery. The future plan of care should be reviewed carefully with women who have experienced a third- or fourth-degree tear, particularly if they are symptomatic, as they may be at increased risk of further anorectal damage with a subsequent delivery. (Evidence level IIa)

Definitions:

Grading of Recommendations

Grade A - Requires at least one randomised controlled trial as part of a body of literature of overall good quality and consistency addressing the specific recommendation (evidence levels Ia, Ib)

Grade B - Requires the availability of well-conducted clinical studies but no randomised clinical trials on the topic of recommendations (evidence levels IIa, IIb, III)

Grade C - Requires evidence obtained from expert committee reports or opinions and/or clinical experience of respected authorities. Indicates an absence of directly applicable clinical studies of good quality (evidence level IV)

Levels of Evidence

Ia: Evidence obtained from meta-analysis of randomised controlled trials

Ib: Evidence obtained from at least one randomised controlled trial

IIa: Evidence obtained from at least one well-designed controlled study without randomisation

IIb: Evidence obtained from at least one other type of well-designed quasi-experimental study

III: Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies, and case studies

IV: Evidence obtained from expert committee reports or opinions and/or clinical experience of respected authorities

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations" field).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate use of operative vaginal delivery to decrease maternal and fetal morbidity

POTENTIAL HARMS

- Vacuum and forceps delivery can be associated with significant complications, both maternal and fetal. These include cases of maternal death (in association with tearing of the cervix at vacuum delivery, and following uterine rupture in association with forceps delivery).
- Neonatal intracranial and subgaleal haemorrhage are life-threatening complications of particular concern.
- Risks of complications are increased significantly among babies exposed to attempts at both vacuum and forceps delivery.

CONTRAINDICATIONS

CONTRAINDICATIONS

- Fetal bleeding disorders (e.g., alloimmune thrombocytopenia) or a predisposition to fracture (e.g., osteogenesis imperfecta) are relative contraindications to operative vaginal delivery. However, there may be considerable fetal risk if the head has to be delivered abdominally from deep in the pelvis.
- The vacuum extractor is contraindicated with a face presentation.
- Forceps and vacuum extractor deliveries before full dilatation of the cervix are contraindicated. There are a few exceptions which include a prolapsed cord at 9 cm in a multiparous woman or a second twin. Forceps are indicated for the aftercoming head of the breech and in situations where maternal effort is impossible or contraindicated.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- Clinical guidelines are "systematically developed statements which assist clinicians and patients in making decisions about appropriate treatment for specific conditions." Each guideline is systematically developed using a standardised methodology. Exact details of this process can be found in Clinical Governance Advice No. 1: Guidance for the Development of Royal College of Obstetricians & Gynaecologists (RCOG) Green-top Guidelines. (See the "Availability of Companion Documents" field in this summary.)
- These recommendations are not intended to dictate an exclusive course of management or treatment. They must be evaluated with reference to individual patient needs, resources, and limitations unique to the institution and variations in local populations. It is hoped that this process of local ownership will help to incorporate these guidelines into routine practice. Attention is drawn to areas of clinical uncertainty where further research may be indicated.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Audit Criteria/Indicators

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Royal College of Obstetricians and Gynaecologists (RCOG). Operative vaginal delivery. London (UK): Royal College of Obstetricians and Gynaecologists (RCOG); 2005 Oct. 13 p. (Guideline; no. 26). [78 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2000 Oct (revised 2005 Oct)

GUIDELINE DEVELOPER(S)

Royal College of Obstetricians and Gynaecologists - Medical Specialty Society

SOURCE(S) OF FUNDING

Royal College of Obstetricians and Gynaecologists

GUIDELINE COMMITTEE

Guidelines and Audit Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Committee Members: Professor Deirdre J Murphy, MRCOG (Chair); Caroline Bearfield, Guidelines Research Fellow; Ms Toni Belfield, Consumers' Representative; Professor P R Braude, FRCOG, Chairman, Scientific Advisory Committee; Mrs C Dhillon, Head of Clinical Governance and Standards Dept.; Dr Martin Dougherty, A. Director NCC-WCH; Miss L M M Duley, FRCOG, Chairman,

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Guideline authors are required to complete a "declaration of interests" form.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Royal College of Obstetricians and Gynaecologists (RCOG). Instrumental vaginal delivery. London (UK): Royal College of Obstetricians and Gynaecologists (RCOG); 2000 Oct.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the Royal College of Obstetricians and Gynaecologists (RCOG) Web site.

Print copies: Available from the Royal College of Obstetricians and Gynaecologists (RCOG) Bookshop, 27 Sussex Place, Regent's Park, London NW1 4RG; Telephone: +44 020 7772 6276; Fax, +44 020 7772 5991; e-mail: bookshop@rcog.org.uk. A listing and order form are available from the RCOG Web site.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Guidance for the development of RCOG green-top guidelines. Clinical Governance Advice No 1. 2000 Jan. Available from the Royal College of Obstetricians and Gynaecologists (RCOG) Web site.
- Searching for evidence. Clinical Governance Advice No 3. 2001 Oct. Available from the Royal College of Obstetricians and Gynaecologists (RCOG) Web site.

Additionally, audit criteria can be found in section 7 of the original guideline document.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on March 10, 2006. The information was verified by the guideline developer on April 26, 2006.

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